IN THE CLAIMS:

Claims 1-45 (Cancelled).

46. (Withdrawn) A method of eliminating a data item at a given location in a data processing system when said data item can be obtained from another location in the system, the method comprising the steps of:

determining a substantially unique identifier for the data, said identifier depending on all of the data in the data item and only on the data in the data item;

making and maintaining a source association between the data identifier and at least one location at which said data item is known to be present; and

based on said source association, if said data item is present at said other location, removing the data item from the given location.

47. (Withdrawn) A method of deleting a data item from a location in a data processing system, the method comprising the steps of:

for each of a plurality of data items in the system:

determining a substantially unique identifier for the data, said identifier depending on all of the data in the data item and only on the data in the data item; and

making and maintaining, an association between each of the data items and the unique identifier of the data items; and

for a given data item:

determining a substantially unique identifier for the data, said identifier depending on all of the data in the data item and only on the data in the data item; and

determining whether a contextual identifier or a compound data item or a remote processor in the system refers to the unique identifier of the data item, and based on said determining, deleting said data item and its association if no other contextual identifier or compound data item or remote processor refers to said data item.

48. (Withdrawn) The method of claim 47, wherein said determining is based on a use count for the data item, and wherein said data item is deleted only if said use count indicates that no other contextual identifier or compound data item or remote processor in the system refers to the data item.

49. (Withdrawn) A method of substantially synchronizing data items at a client location in a data processing system after a period of independent changes on the client and another location in the system, given a context, the method comprising the steps of:

making and maintaining a list of changes to the context association between each context name of a data item and the identifier of said data item, in the given context and during the period of independent change;

obtaining the list of changes from the other location for the given context; and,

for each context name in the list of changes

updating the context identifier associations at the client whenever it is determined that the context association of the given context name changed either only at the client or only at the other location during the period if independent changes; and

performing a conflict-resolution task such as notifying an operator of the client location, whenever it is determined that the context association changed at both the client and the other location.

Claims 50-53 (Cancelled)

54. (Currently Amended) ~~A content delivery method, in~~ In a system in which a plurality of files are distributed across a plurality of computers ~~network of servers, at least some of the files being cached versions of files from a source server distinct from the network of servers, the content delivery~~ a method comprising:

~~for a particular file, determining~~ obtaining a name for a data file, the name being based at least in part on ~~using~~ a given function of the data ~~, said data being the data~~ which comprises the contents of the ~~particular~~ data file; and

in response to a request for the a ~~particular~~ data file, the request including at least the name of the particular file, causing a copy of the ~~particular~~ file to be provided from a given one of the ~~servers of the network of servers~~ plurality of computers.

55. (Currently Amended) A ~~content delivery~~ method, in a system in which a plurality of files are distributed across a plurality of computers ~~network of servers, at least some of the files being cached versions of files from a source server distinct from the servers in the network~~, wherein data in a file in the system may represent a digital message, a digital image, a video signal or an audio signal, the ~~content delivery~~ method comprising:

obtaining ~~determining~~ a name for a ~~particular~~ data file, the name ~~being~~ having been determined using an MD5 function of the data ~~, said data being the data~~ which comprises the contents of the ~~particular~~ data file; and

in response to a request for the ~~particular~~ data file, the request including at least the name of the ~~particular~~ data file, providing the ~~particular~~ data file from a given one of the ~~servers of the network of servers~~ plurality of computers , said providing being based at least in part on the determined name.

C2

56. (Currently Amended) A ~~content delivery~~ method, in a system in which a plurality of files are distributed across a ~~network of servers~~ plurality of computers, wherein some of the computers ~~processors in the network~~ communicate with each other using a TCP/IP communication protocol, the ~~content delivery~~ method comprising:

obtaining a name for a particular data file, the contents of said data file representing a digital image, ~~determining a name for the particular file, wherein~~ the name ~~is~~ being determined using at least a given function of the data which comprises the contents of the particular data file; and

in response to a request for the particular data file, the request including at least the name of the particular data file, providing the particular file from a given one of the ~~servers of the network of servers~~ plurality of computers.

57. (Currently Amended) A ~~content delivery~~ method comprising:

causing a plurality of files to be distributed across a ~~network of servers~~ plurality of computers~~, at least some of the files being cached versions of files from a source server which is distinct from the network of servers~~;

obtaining a name for a particular file~~, determining a name~~, the name ~~being~~ having been determined using a given function of the data~~, said data used by said function being data~~ which comprises the contents of the particular file; and

in response to a request for the particular file, the request including at least the name of the particular file, causing the particular file to be provided from a given one of the ~~servers of the network of servers~~ plurality of processors.

58. (Currently Amended) A ~~content delivery~~ method, in a system in which a plurality of files are distributed across a plurality of computers ~~network of servers, at least some of the files being cached versions of files from a source server which is distinct from the network of servers, the content delivery~~ the method comprising:

obtaining ~~determining~~ a name for a particular file, the name being determined using a given function of the data which comprises the contents of the particular file; and

in response to a request for the particular file, the request including at least the name of the particular file, providing the particular file from a given one of the ~~servers of the network of servers~~ computers, wherein the contents of the particular file may represent a digital message, a digital image, a video signal or an audio signal.

59. (Currently Amended) A method, in a network comprising a plurality of computers ~~processors~~, some of the computers ~~processors~~ functioning as servers and some of the computers ~~processors~~ functioning as clients, wherein some computers ~~processors~~ in the network communicate with each other using a TCP/IP

communication protocol, wherein a key is required to identify a file on the network, the method comprising:

storing some files on a first computer ~~server~~ in the network and storing copies of some of the files from the first computer ~~server~~ on a set of computers ~~cache servers~~ distinct from the first computer ~~server~~;

for a particular file, determining a different cache key from an ordinarily used ~~cache~~ key for the file, the different ~~cache~~ key being determined at least in part using a message function MD5 of the data~~, wherein said data~~ which comprises the contents of the particular file; and

responsive to a ~~client~~ request for the particular file, the request including the different ~~cache~~ key for the file, causing the particular file to be provided to the ~~client~~ requestor,

wherein the contents of the file may represent: a page in memory, a digital message, a digital image, a video signal or an audio signal.

C2

60. (Currently Amended) A ~~content delivery~~ method comprising:

distributing a set of files from a first computer ~~server~~ across a network of computers ~~servers~~ distinct from the first computer ~~server~~;

applying an MD5 function to the contents of a particular file to obtain a True Name for the file;

in response to a request for the particular file, the request including at least the True Name of the particular file, causing the particular file to be provided from a given one of the computers ~~servers of the network of servers~~, wherein the request for the particular file is resolved based, at least in part, on a measure of availability of at least one of the computers ~~servers~~.

61. (Currently Amended) A method as in claim 60 wherein the measure of availability for a computer ~~server~~ is based on at least one of:

(a) a measurement of bandwidth to the computer ~~server~~;

(b) a measurement of a cost of a connection to the computer ~~server~~, and

(c) a measurement of reliability of a connection to the computer ~~server~~.

62. (Currently Amended) A content delivery method comprising:

distributing a plurality of files across a network of computers ~~servers, at least some of the files being cached versions of files from a source server distinct from the servers in the network~~;

for a particular file, determining a True Name using at least a given function of the data which comprises the contents of the particular file;

obtaining a request for the particular file, the request including at least the True Name of the particular file; and

responsive to the request, causing the particular file to be provided from one of the servers of the network of ~~servers~~ computers.

C2

63. (Previously presented) A content delivery method, comprising:

distributing files across a network of servers;

for a particular file having a contextual name specifying a location in the network at which the file may be located, determining another name for the particular file, the other name including a data identifier determined using a given function of the data, where said data used by the given function comprises the contents of the particular file;

obtaining a request for the particular file, the request including the contextual name and the other name of the particular file,

responsive to the request, providing the particular file from one of the servers of the network of servers, said providing being based on the other name of the particular item.

64. (Previously presented) A content delivery method, comprising:

distributing a set of files across a network of servers;

for a particular file representing a digital image, the file having a contextual name specifying a location in the network at which the file may be located, determining another name for the particular file, the other name including a True Name for the file which was determined using a message digest function of the data, where said data used by the given function comprises the contents of the particular file;

obtaining a request for the particular file, the request including the contextual name and the True Name of the particular file; and

responsive to the request, providing the particular file from one of the servers of the network of servers, said providing being based on the True Name of the particular item.

65. (Previously presented) A method comprising:

applying an MD5 function to the contents of an image file containing data representing a digital image to obtain a True Name for the file

distributing copies of the image file from a first server across a network of servers distinct from the first server;

obtaining a request for the image file, the request including at least the True Name of the file; and

responsive to the request, causing a copy of the image file to be provided from one of the servers of the network of servers.

NEW CLAIMS

66. (New) A method as in claim 54, wherein the requested file is only provided to authorized or licensed parties.

67. (New) A method as in claim 54, wherein the requested file is not provided to unlicensed or unauthorized parties.

68. (New) A method as in claim 54 further comprising:

determining, using at least the name, whether a copy of the data file is present on a particular one of said computers.

69. (New) A method as in claim 54 further comprising:

determining, using at least the name, whether an authorized or licensed copy of the data file is present on a particular one of said computers.

C3

70. (New) A method, in a system in which a plurality of files are distributed across a plurality of computers, the method comprising:

obtaining a name for a data file, the name being based at least in part on a given function of the data which comprises the contents of the particular file;

determining, using at least the name, whether a copy of the data file is present on a at least one of said computers.

71. (New) A method as in claim 70 further comprising:

determining whether a copy of the data file that is present on a at least one of said computers is an authorized or licensed copy of the file.

72. (New) A method as in claim 71 further comprising:

allowing the file to be provided from one of the computers having an authorized or licensed copy of the file.

73. (New) A method as in claim 70 wherein at least some of the plurality of computers comprise a peer-to-peer network.

74. (New) A method, in a system in which a plurality of files are distributed across a plurality of computers which form a peer-to-peer network, the method comprising:

obtaining a TrueName for a data file, the TrueName being based at least in part on a given function of the data which comprises the contents of the particular file; and

determining, using at least the name, whether a licensed or authorized copy of the data file is present on a particular computer.

C3

75. (New) A method comprising:

obtaining a name for a data file, the name being based at least in part on a function of the data which comprise the contents of the file; and

in response to a request for the data file, the request including at least the obtained name of the data file, causing the contents of the data file to be provided from a computer having a licensed or authorized copy of the data file.

76. (New) A method as in claim 75 wherein the function is a message digest function or a hash function.

77. (New) A method as in claim 75 wherein the function is selected from the functions: MD4, MD5, and SHA.

78. (New) A method as in claim 75 wherein the given function randomly distributes its outputs.

79. (New) A method as in claim 75 wherein the function produces a substantially unique value based on the data comprising the data file.

80. (New) A method as in claim 75 wherein a data file may comprise a file, a portion of a file, a page in memory, a digital message, a digital image, a video signal or an audio signal.

81. (New) A method as in claim 75 wherein certain processors in the network communicate with each other using a TCP/IP communication protocol.

82. (New) A method as in claim 75 wherein said name for said data file, as determined using said function, will change when the data file is modified.

C3

83. (New) A method, in a system in which a plurality of files are distributed across a plurality of computers, the method comprising:

obtaining a name for a data file, the name being based at least in part on an MD5 function of the data which comprises the contents of the particular file;

determining, using at least the obtained name, whether an authorized or licensed copy of the data file is present on a at least one of said computers.

84. (New) A method comprising:

obtaining a list of file names for each of a plurality of files, each of said file names having been determined, at least in part, by applying a function to the contents of the corresponding file;

using at least said list to determine whether unauthorized or unlicensed copies of some of the plurality of data files are present on a particular computer.

85. (New) A method as in claim 84 further comprising:

in response to a request for a particular data file, allowing the contents of the data file to be provided from a computer determined to have a licensed or authorized copy of the data file.

86. (New) A method as in claim 84 wherein the particular computer is part of a peer-to-peer network of computers.

87. (New) A method as in claim 84 further comprising:

if the computer is found to have a file that it is not authorized or licensed to have, recording information about the computer and about the file.

88. (New) A method as in claim 84 wherein the function is a message digest function or a hash function.

89. (New) A method as in claim 84 wherein the function is selected from the functions: MD4, MD5, and SHA.

90. (New) A method as in claim 84 wherein the given function randomly distributes its outputs.

91. (New) A method as in claim 84 wherein the function produces a substantially unique value based on the data comprising the data file.

92. (New) A method comprising:

obtaining a list of True Names for each of a plurality of files;

for at least some computers that make up part of a peer-to-peer network of computers, comparing at least some of the contents of the computers to the list of True Names to determine whether unauthorized or unlicensed copies of some of the plurality of data files are present on those computers; and

based at least in part on said comparing, if a computer is found to have content that it is not authorized or licensed to have, recording information about the computer and about the unauthorized or unlicensed content.

93. (New) A method as in claim 92 wherein the True Names are determined using a message digest function or a hash function.

94. (New) A method as in claim 92 wherein the function is selected from the functions: MD4, MD5, and SHA.

95. (New) A method comprising:

obtaining a list of True Names for each of a plurality of files, wherein, for each of the files, the True Name for that file is determined using an MD5 function of the contents of the file;

C3 comparing at least some of the contents of a computers to the list of True Names to determine whether unauthorized or unlicensed copies of some of the plurality of data files are present on that computer; and

based at least in part on said comparing, if a computer is found to have content that it is not authorized or licensed to have, recording information about the computer and about the unauthorized or unlicensed content.

96. (New) A method comprising:

distributing a set of files from a first computer across a network of computers distinct from the first computer;

in response to a request for the particular file, causing the particular file to be provided from a given one of the computers, wherein the request for the particular file is resolved based, at least in part, on a measure of availability of at least one of the computers, and wherein the measure of availability for a computer is based on at least one of:

(a) a measurement of bandwidth to the computer;

(b) a measurement of a cost of a connection to the computer, and

(c) a measurement of reliability of a connection to the computer.

97. (New) A method as in claim 91 wherein the request for the particular file includes a name determined as a function of the contents of the file.

98. (New) In a system in which a data file is distributed across a plurality of computers, a method comprising:

obtaining a name for the data file, the name being based at least in part on a given function of the data which comprise the contents of the data file;

determining, using at least the name, whether an authorized or licensed copy of the data file is present on a particular one of said computers.

C3

99. (New) A method as in claim 94, further comprising:

in response to a request for the data file, allowing a copy of the file to be provided from a given one of the plurality of computers having an authorized or licensed copy of the file.

100. (New) A method as in claim 54, further comprising:

maintaining accounting information relating to the data files.

101. (New) A method as in claim 96, wherein the maintaining of accounting information includes at least some of:

(a) tracking which files have been stored on a computer; and

(b) tracking which files have been transmitted from a computer.

102. (New) Computer-readable media tangibly embodying a program of instructions executable by at least one computer, the program comprising code to:

obtain a name for a data file, the name being based at least in part on a given function of the data which comprises the contents of the data file; and

in response to a request for the a data file, the request including at least the name of the particular file, cause a copy of the file to be provided from a given one of the plurality of computers.

103. (New) Computer-readable media tangibly embodying a program of instructions executable by at least one computer, the program comprising code to:

obtain a TrueName for a data file, the TrueName being based at least in part on a given function of the data which comprises the contents of the particular file; and

determine, using at least the name, whether a licensed or authorized copy of the data file is present on a particular computer.

104. (New) Computer-readable media tangibly embodying a program of instructions executable by at least one computer, the program comprising code to:

C3

obtain a list of file names for each of a plurality of files, each of said file names having been determined, at least in part, by applying a function to the contents of the corresponding file; and

determine, using at least said list, whether unauthorized or unlicensed copies of some of the plurality of data files are present on a particular computer.

105. (New) Computer-readable media tangibly embodying a program of instructions executable by at least one computer, the program comprising code to:

obtain a name for the data file, the name being based at least in part on a given function of the data which comprise the contents of the data file; and

determine, using at least the name, whether an authorized or licensed copy of the data file is present on a particular one of said computers.

106. (New) Media as in claim 105 wherein the given function is a message digest function or a hash function.

107. (New) A computer system programmed to:

obtain a list of file names for each of a plurality of files, each of said file names having been determined, at least in part, by applying a function to the contents of the corresponding file; and

determine, using at least said list, whether unauthorized or unlicensed copies of some of the plurality of data files are present on a particular computer.

108. (New) A computer system as in claim 107 wherein the function is a message digest function or a hash function.

109. (New) A computer system as in claim 107 wherein the function is an MD5 function.